

**IN THE UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF MICHIGAN  
SOUTHERN DIVISION**

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BEACON NAVIGATION GMBH,

Plaintiff,

v.

BAYERISCHE MOTOREN WERKE AG,  
BMW OF NORTH AMERICA, LLC, AND  
BMW MANUFACTURING CO., LLC,

Defendants.

Case No. 2:13-cv-11410-MAG-EAS

Hon. Mark A. Goldsmith  
Mag. Elizabeth A. Stafford

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BEACON NAVIGATION GMBH,

Plaintiff,

v.

HYUNDAI MOTOR COMPANY,  
HYUNDAI MOTOR AMERICA, AND  
HYUNDAI MOTOR MANUFACTURING  
ALABAMA, LLC,

Defendants.

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Case No. 2:13-cv-11416-MAG-EAS

Hon. Mark A. Goldsmith  
Mag. Elizabeth A. Stafford

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BEACON NAVIGATION GMBH,

Plaintiff,

v.

KIA MOTORS CORPORATION, KIA  
MOTORS AMERICA, INC., AND KIA  
MOTORS MANUFACTURING  
GEORGIA, INC.,

Defendants.

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Case No. 2:13-cv-11441-MAG-EAS

Hon. Mark A. Goldsmith  
Mag. Elizabeth A. Stafford

## **OPINION AND ORDER CONSTRUING DISPUTED CLAIM TERMS**

In the above-captioned patent infringement cases, plaintiff Beacon Navigation GmbH (“Beacon”) alleges that defendants Bayerische Motoren Werke AG, BMW of North America, LLC, and BMW Manufacturing Co., LLC (collectively, “BMW”), Hyundai Motor Company, Hyundai Motor America, and Hyundai Motor Manufacturing Alabama, LLC (collectively, “Hyundai”), and Kia Motors Corporation, Kia Motors America, Inc., and Kia Motors Manufacturing Georgia, Inc. (collectively, “Kia”) (all of them, collectively, “Defendants”) infringe a Beacon patent on vehicle navigation technology, U.S. Patent No. 5,862,511 (the “’511 Patent”).

Pursuant to the Court’s Scheduling Order, the parties were to identify the disputed claim terms within the ’511 Patent that they feel are material to the infringement and validity issues in these cases. The parties have submitted briefs explaining their positions on (1) how the disputed claim terms should be construed and (2) whether certain of the disputed claim terms are indefinite and therefore render the claims invalid.<sup>1,2</sup> The Court held oral argument on July 25, 2023. In this

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<sup>1</sup> Case No. 2:13-cv-11410, ECF Nos. 67, 73, 78 (BMW); Case No. 2:13-cv-11416, ECF Nos. 60, 65, 71 (Hyundai); Case No. 2:13-cv-11441, ECF Nos. 60, 65, 71 (Kia).

<sup>2</sup> The parties have submitted the same briefs in each of the above-captioned cases. For ease of reference, the Court will cite to the record in the lowest numbered case, which is currently Case No. 2:13-cv-11410.

opinion and order, the Court will construe the disputed claim terms identified by the parties and determine whether certain of the disputed claim terms are indefinite, pursuant to *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996).

## **I. PROCEDURAL HISTORY**

The above-captioned cases once belonged to a larger group of related patent infringement cases involving additional defendants and additional Beacon patents. While their procedural history involves the original venue, the United States District Court for the District of Delaware (the “District of Delaware”), and a proceeding in the United States International Trade Commission (the “ITC”), the cases largely owe their current posture to a succession of proceedings in the United States Patent and Trademark Office (the “USPTO”).

On October 11, 2011, Beacon filed thirty-eight patent infringement cases in the District of Delaware, alleging that nineteen groups of defendants, comprising fifty-six companies in the automotive industry, infringed eight Beacon patents on vehicle navigation technology.<sup>3</sup> The same month, on October 21, 2011, Beacon filed a parallel complaint in the ITC, alleging that the defendants infringed four of the

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<sup>3</sup> In addition to the ’511 Patent, Beacon alleged that the defendants infringed U.S. Patent Nos. 5,819,201; 5,878,368; 6,029,111; 6,163,269; 6,178,380; 6,360,167; and 6,374,180.

Beacon patents.<sup>4</sup> On November 23, 2011, the ITC instituted an investigation, but on April 13, 2012, Beacon withdrew the complaint and terminated the investigation before a final determination. On March 20, 2013, after staying the district court cases pending the ITC investigation, the District of Delaware transferred them to this District.

After the transfer, beginning on August 12, 2013, the Court stayed the district court cases pending a succession of USPTO proceedings. In response to Beacon's infringement allegations, the defendants and third-parties filed various requests for reexamination and *inter partes* review in the USPTO, seeking to initiate proceedings to review the patentability of the asserted claims of the Beacon patents. Following initial requests filed in the 2011-2012 timeframe, when the district court cases were stayed pending the ITC investigation, the requestors filed additional requests in the USPTO throughout the 2014-2018 timeframe, each time seeking review of the asserted claims that survived the previous USPTO proceedings.

Ultimately, the USPTO cancelled the asserted claims of seven Beacon patents, leaving only the '511 Patent and asserted Claims 1 and 3. As to the '511 Patent, the USPTO ordered five reexaminations. After consolidating two of the reexaminations, the USPTO issued four reexamination certificates confirming the novelty and non-

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<sup>4</sup> The investigation was captioned *In re Certain Auto. GPS Navigation Sys., Components Thereof, & Prods. Containing Same* and assigned Inv. No. 337-TA-814.

obviousness of Claims 1 and 3. *Ex Parte* Reexamination Certificate Nos. 5,862,511 C1, 5,862,511 C2, 5,862,511 C3, and 5,862,511 C4. In addition to twenty-eight district court cases involving only other Beacon patents, by stipulation of the parties, the Court has dismissed many of the remaining ten district court cases involving the '511 Patent. Only the three above-captioned cases against BMW, Hyundai, and Kia remain pending.

On August 19, 2022, following the conclusion of the last USPTO proceeding, the Court lifted the stay. On November 18, 2022, to reflect their current posture, Beacon filed first amended complaints ("FACs") in the above-captioned cases, alleging that BMW, Hyundai, and Kia infringe Claims 1 and 3 of the '511 Patent.<sup>5,6</sup>

In the FACs, Beacon alleges that Defendants infringe Claims 1 and 3 of the '511 Patent in connection with sales of vehicles with GPS navigation systems (the "accused vehicles" and the "accused navigation systems") prior to the '511 Patent's December 28, 2015 expiration date. Beacon alleges that Defendants directly infringe Claim 1 by making, importing, and selling the accused vehicles. FAC ¶¶ 16-17, ECF No. 60, PageID.3223-3224. Beacon alleges that, with knowledge of the '511 Patent,

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<sup>5</sup> Case No. 2:13-cv-11410, ECF No. 60 ("BMW FAC"); Case No. 2:13-cv-11416, ECF No. 55 ("Hyundai FAC"); Case No. 2:13-cv-11441, ECF No. 55 ("Kia FAC").

<sup>6</sup> With the exception of naming different companies and listing different vehicles, the claims and allegations are generally the same for all of the Defendants. For ease of reference, the Court will cite to the FAC in the lowest numbered case, which is currently the BMW FAC in Case No. 2:13-cv-11410, ECF No. 60.

Defendants induce infringement of Claim 3 by providing the accused vehicles along with instructions to use the accused navigation systems. *Id.* ¶¶ 22-24, ECF No. 60, PageID.3226.

## **II. LAW OF CLAIM CONSTRUCTION**

In their briefs, the parties raise (1) disputed issues of claim construction and (2) disputed issues of definiteness. The proper construction of disputed claim terms is a question of law reserved to courts. *Markman*, 517 U.S. at 372, 391. The determination of indefiniteness is a legal conclusion drawn from a court's performance of its duty as the construer of claims. *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1376 (Fed. Cir. 2001).

### **A. General Principles**

The claims of a patent are short and concise statements, expressed with great formality, of the metes and bounds of the patent invention. Each claim is written in the form of a single sentence. Claim construction is the manner in which courts determine the meaning of a disputed term in a claim. "The construction of claims is simply a way of elaborating the normally terse claim language: in order to understand and explain, but not to change, the scope of the claim." *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1580 (Fed. Cir. 1991), *overruled in part on other grounds by Abbott Labs. v. Sandoz, Inc.*, 566 F.3d 1282, 1293 (Fed. Cir. 2009) (*en banc*). The construction of key terms in patent claims plays

a critical role in nearly every patent infringement case. Claim construction is central to both a determination of infringement and validity of a patent. The judge, not a jury, is to determine the meaning of the disputed claim terms as a matter of law. *Markman*, 517 U.S. at 372, 391.

A court has two primary goals in construing the disputed claim terms. The first goal is to determine the scope of the patented invention by interpreting the disputed claim terms to the extent needed to resolve the dispute between the parties. The second goal is to provide a construction that will be understood by the jury, which might otherwise misunderstand a claim term in the context of the patent specification and prosecution history of the patent. *See, e.g., Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1348 (Fed. Cir. 2010) (“The terms, as construed by the court, must ensure that the jury fully understands the court’s claim construction rulings and what the patentee covered by the claims.”); *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997) (“Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary, to explain what the patentee covered by the claims, for use in the determination of infringement.”). The Court’s claim construction ruling forms the basis for the ultimate jury instructions, although that is not to say that the Court cannot modify its wording for the jury instructions after ruling on claim construction.



*See IPPV Enters., LLC v. Echostar Commc 'ns Corp.*, 106 F. Supp. 2d 595, 601 (D. Del. 2000).

The seminal case setting forth the principles for construing disputed claim terms is *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*). According to *Phillips*, the words of the claim are generally given their “ordinary and customary” meaning, i.e., “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Id.* at 1312-13. The person of ordinary skill in the art views the claim term in light of the entire intrinsic record, which is the entire claim, the other parts of the patent, and, if in evidence, the prosecution history of the patent before the USPTO. *Id.* at 1313-14. Although a claim must be construed in view of the entire patent, the court should normally not read limitations or features of the exemplary embodiments discussed in the patent specification into the claims. *Id.* at 1323-24.

The prosecution history of the patent can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention during the course of prosecution by his statements, making the claim scope narrower than it would otherwise be. However, because the prosecution history is an ongoing negotiation between the patent office and the patent owner, rather than the final product of that negotiation, it often lacks

the clarity of the patent itself and is generally less useful for claim construction purposes. *Id.* at 1317.

In discerning the meaning of claim terms, resorting to dictionaries and treatises also may be helpful. *Id.* at 1320-23. However, undue reliance on extrinsic evidence poses the risk that it will be used to change the meaning of claims in derogation of the indisputable public records consisting of the claims, the specification of the patent and the prosecution history, thereby undermining the public notice function of patents. *Id.* In the end, the construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be the correct construction. *Id.* at 1316.

It is proper for a court to construe the disputed claim terms in the context of the infringement or invalidity dispute by viewing the accused device or prior art. Viewing the accused device or prior art allows the court to construe the claims in the context of the dispute between the parties, not in the abstract. “While a trial court should certainly not prejudge the ultimate infringement analysis by construing claims with an aim to include or exclude an accused product or process, knowledge of that product or process provides meaningful context for the first step of the infringement analysis, claim construction.” *Wilson Sporting Goods Co. v. Hillerich & Bradsby Co.*, 442 F.3d 1322, 1326-27 (Fed. Cir. 2006). The Federal Circuit has held that without “the vital contextual knowledge of the accused products,” a court’s

claim construction decision “takes on the attributes of something akin to an advisory opinion.” *Lava Trading, Inc. v. Sonic Trading Mgmt., LLC*, 445 F.3d 1348, 1350 (Fed. Cir. 2006).

## **B. Definiteness Requirement**

The Patent Act establishes invalidity as a defense to infringement. 35 U.S.C. § 282(b). Under an invalidity defense, an accused infringer can “attempt to prove that the patent never should have issued in the first place.” *Microsoft Corp. v. i4i Ltd. P’ship*, 564 U.S. 91, 96 (2011). A patent enjoys a statutory presumption of validity, and the party asserting invalidity must prove invalidity by clear and convincing evidence. 35 U.S.C. § 282(a); *Microsoft*, 564 U.S. at 95.

Invalidity is proven when it is shown that any requirement of Section 112 was not satisfied at the time the patent issued. 35 U.S.C. § 282(b)(3)(A). Section 112, second paragraph, requires that the specification of a patent “conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” *Id.* § 112, ¶ 2 (pre-AIA). The statutory requirement of “particularity and distinctness” is known as the “definiteness” requirement. *United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 236-37 (1942). A claim of a patent is invalid as indefinite if, when “read in light of the specification ... and the prosecution history,” the claim “fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.”

*Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). A claim term renders a claim indefinite if the term “might mean several different things and no informed and confident choice is available among the contending definitions.” *Id.* at 911 n.8 (quotation omitted).

### **III. '511 PATENT**

The '511 Patent, entitled “Vehicle Navigation System and Method,” was filed in the USPTO on December 28, 1995 and issued on January 19, 1999. The '511 Patent expired on December 28, 2015, twenty years after its filing date. *See* 35 U.S.C. § 154(a)(2).

The '511 Patent is directed to vehicle navigation technology. In the written description, the '511 Patent begins with a helpful background section on prior navigation systems. In general, to support a vehicle’s navigation functionality, such as route guidance and turn-by-turn navigation, navigation systems work by continuously determining the vehicle’s current position. To determine the current position, navigation systems use information from a Global Positioning System (GPS), motion sensors, and a map database. '511 Patent 1:16-2:25. In connection with these components, as the vehicle moves and the once-current position becomes a previous position, navigation systems can use different techniques to re-determine the current position. For example, a GPS position based on information from space-based satellites can be used for the current position. *Id.* 1:16-18. Alternatively, using

“propagation” (also known as “dead reckoning”) techniques, information from the motion sensors can be used to propagate the current position from the previous position. *Id.* 1:63-2:3. Moreover, using “map matching” techniques, information from the motion sensors can be matched to a position in the map database, and the resulting map-matched position can be used for the current position. *Id.* 2:13-25.

The '511 Patent describes a navigation system that uses GPS velocity information to implement purportedly improved propagation techniques. *Id.* 2:32-3:13. Before turning to the disclosed propagation techniques, it is important to note that the '511 Patent assumes knowledge of math principles, two of which are relevant to the asserted claims. First, position and velocity are “vectors.” This means that, in addition to their distance and speed (i.e., magnitude) components, position and velocity have a heading (i.e., direction) component. Accordingly, map-matched positions have map headings, and GPS velocities have GPS headings, that point, for example, in the East and North directions. *Id.* 2:32-36, 7:67-8:3. Second, relevant to the disclosed propagation techniques, velocity can be “integrated” to obtain “displacements” (i.e., changes in position) in the directions of the heading. Accordingly, GPS velocities can be integrated to obtain displacements, which can then be applied to the previous position to obtain the current position. *Id.* 15:45-49, 15:58-63, 16:12-16.

In connection with the disclosed propagation techniques, Claims 1 and 3 of the '511 Patent are directed to an embodiment for updating GPS velocity information with a map heading. *Id.* 15:29-44, 15:53-16:22. As shown in Figure 7c, reproduced below, the embodiment involves steps for updating a GPS velocity vector (200) with a map heading (202) for use in the propagation of a previous position (191) to a current position (206). *Id.* 15:53-65.

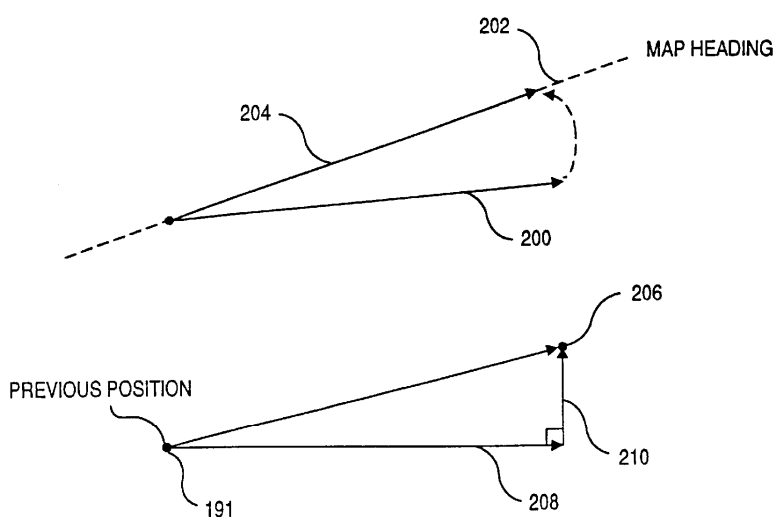


Fig-7c

The GPS velocity vector (200) has GPS speed and GPS heading components. *Id.* 2:32-36. The map heading (202) is based on the heading of the mapped path on which the vehicle is traveling. *Id.* 15:29-34. When the difference between the GPS heading and the map heading (202) is within a threshold, the GPS velocity vector (200) is rotated to align with the map heading (202). *Id.* 15:58-63. The rotated GPS velocity vector (204) is then integrated to obtain displacements (208 and 210). *Id.*

The displacements (**208** and **210**) are then applied to the previous position (**191**) to obtain the current position (**206**). *Id.* 15:63-65.

Claim 1 recites the patented navigation system, and Claim 3 recites the patented navigation method. With emphasis added to the disputed claim terms, discussed below, Claims 1 and 3 recite:

1. An improved vehicle navigation system comprising:

a map database with map information, said vehicle navigation system derives a map heading from said map information; and

a GPS receiver which provides GPS velocity information including a heading, said vehicle navigation system uses said velocity information to propagate a **previous position** to a **current position** and interrogates said map database to obtain said map heading information; said vehicle navigation system updates said velocity information with said map heading for **propagating said previous position to said current position** if the difference between the heading of said velocity information and said map heading are within a threshold, wherein said system rotates said velocity to align with said map heading and integrates the rotated velocity to obtain displacements; said system obtains said **current position** by applying said displacements to said **previous position**.

3. A method of **estimating the velocity of a vehicle** known to be on a mapped path comprising:

determining the velocity of the vehicle, the velocity including a heading;

interrogating a map database to obtain a map heading of said mapped path; and

updating said velocity with said map heading if the difference between the heading of said velocity and said map heading are within a threshold;

using said velocity to **propagate a previous position to a current position**, wherein said step of using includes rotating velocity to align with said map heading and integrating rotated velocity to obtain a displacement and obtaining said **current position** by applying said displacement to said **previous position**.

*Id.* 17:11-29 (Claim 1) (emphasis added), 17:48-63 (Claim 3) (emphasis added).

As noted above, Claims 1 and 3 are directed to the embodiment shown in Figure 7c. Claim 1 recites a GPS receiver and a map database, and is otherwise directed to a navigation system that generally performs the steps recited in Claim 3. In addition to a previous position and a current position, the claim language involves an initial velocity, an updated velocity, and a rotated velocity, as well as a velocity heading of the initial velocity, and a map heading from the map database. In Claim 1, the initial velocity is GPS velocity information from the GPS receiver, and in Claim 3, the initial velocity is the velocity of the vehicle.

In the written description, the '511 Patent explains the advantages of the claimed invention and more specifically using the GPS velocity information for propagation when GPS is available. When GPS is unavailable, the navigation system can use information from the motion sensors to propagate the current position from the previous position. *Id.* 14:41-15:7. When GPS is available, as opposed to using a GPS position as a known current position, the navigation system uses a GPS velocity to propagate the current position from the previous position. *Id.* Abstract, 1:5-12, 2:32-36. According to the '511 Patent, GPS velocities are more accurate than GPS



positions. *Id.* 16:53-55. By using GPS velocity information for propagation, the navigation system can accurately and smoothly track the movement of the vehicle for turn-by-turn navigation. *Id.* 16:55-59.

#### IV. CLAIM CONSTRUCTION ANALYSIS

In their *Markman* briefs and at oral argument, the parties explain that they have reached agreements on the proper constructions of four terms in Claims 1 and 3 of the '511 Patent: (a) “GPS velocity information”<sup>7</sup>; (b) “velocity”; (c) “integrates the rotated velocity to obtain displacements” and “integrating rotated velocity to obtain a displacement”; and (d) “rotates said velocity to align with said map heading” and “rotating velocity to align with said map heading.”

| Agreed Term                          | Agreed Construction  |
|--------------------------------------|--|
| “GPS velocity information” (Claim 1) | Information based on the speed and heading of the GPS receiver |
| “velocity” (Claim 3)                 | Velocity vector, which includes speed and heading components   |

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<sup>7</sup> In their *Markman* briefs, the parties requested that the Court construe “GPS velocity information” in Claim 1 of the '511 Patent. Beacon argued that the term should be construed to mean “information based on speed and/or direction of a GPS receiver,” and Defendants argued that the term should be construed to mean “information derived from a GPS receiver based on at least speed.” Before oral argument, the Court’s Special Master Christopher G. Darrow proposed to the parties that the term should be construed to mean “information based on the speed and heading of the GPS receiver,” and the parties agreed with the Special Master’s proposed construction.

|   |  |
|---|--|
| “integrates the rotated velocity to obtain displacements” (Claim 1) and “integrating rotated velocity to obtain a displacement” (Claim 3) | Calculates the integral of the rotated velocity to obtain displacements/ calculating the integral of the rotated velocity to obtain a displacement |
| “rotates said velocity to align with said map heading” (Claim 1) and “rotating velocity to align with said map heading” (Claim 3)         | Rotates/rotating the velocity vector to align with the map heading while maintaining the magnitude of the velocity vector                          |

First, the parties agree that “GPS velocity information” in Claim 1 of the ’511 Patent means “information based on the speed and heading of the GPS receiver.” Second, the parties agree that “velocity” in Claim 3 of the ’511 Patent means “velocity vector, which includes speed and heading components.” Third, the parties agree that “integrates the rotated velocity to obtain displacements” in Claim 1 of the ’511 Patent means “calculates the integral of the rotated velocity to obtain displacements.” Similarly, the parties agree that “integrating rotated velocity to obtain a displacement” in Claim 3 of the ’511 Patent means “calculating the integral of the rotated velocity to obtain a displacement.” Fourth, the parties agree that “rotates said velocity to align with said map heading” in Claim 1 of the ’511 Patent and “rotating velocity to align with said map heading” in Claim 3 of the ’511 Patent mean “rotates/rotating the velocity vector to align with the map heading while maintaining the magnitude of the velocity vector.”

The parties request that the Court construe four additional terms in Claims 1 and 3 of the ’511 Patent: (a) “current position”; (b) “propagating said previous

position to said current position” and “propagate a previous position to a current position”; (c) “estimating the velocity of a vehicle”; and (d) “previous position.”

Below, the Court will address the proper constructions of the disputed claim terms, including, where the parties have raised the issue, whether the disputed claim terms are indefinite.

**A. “Current Position” (Claims 1 and 3)**

| <b>Disputed Term</b>                   | <b>Beacon’s Proposed Construction</b> | <b>Defendants’ Proposed Construction</b>   | <b>Court’s Construction</b>                |
|--|---------------------------------------|--|--|
| “current position”<br>(Claims 1 and 3) | Plain and ordinary meaning            | Indefinite.<br><br>Alternatively: A position obtained by map matching a velocity vector, rotating said velocity vector (conditional), and integrating said rotated velocity vector | Not indefinite; Plain and ordinary meaning |

The parties request that the Court construe “current position” in Claims 1 and 3 of the ’511 Patent. Although the term appears in Claims 1 and 3, in their *Markman* briefs, the parties only discuss Claim 1, and state that their arguments apply to Claim 3. Accordingly, the Court will address the issues raised by the parties in the context of Claim 1 and the recited GPS velocity information.

Claim 1 includes three instances of “current position.” While the claim language refers to a singular “current position,” the term appears in three claim limitations directed to the way the navigation system determines the current position:

\* \* \*

a GPS receiver which provides GPS velocity information including a heading, said vehicle navigation system uses said velocity information to propagate a previous position to **a current position** and interrogates said map database to obtain said map heading information; said vehicle navigation system updates said velocity information with said map heading for propagating said previous position to **said current position** if the difference between the heading of said velocity information and said map heading are within a threshold, wherein said system rotates said velocity to align with said map heading and integrates the rotated velocity to obtain displacements; said system obtains **said current position** by applying said displacements to said previous position.

’511 Patent 17:11-29 (emphasis added).

The dispute between the parties concerns the internal consistency of the claim language. Defendants argue that the first and third instances of the term “current position” in Claim 1 have different meanings and therefore the claim is internally inconsistent and therefore indefinite. More specifically, Defendants read the claim language as reciting that the navigation system uses the GPS velocity information with both the velocity heading and the map heading to determine two different current positions. Defendants argue that the first instance and the third instance of “current position” cannot be the same because using the velocity heading and using

the map heading are mutually exclusive ways of determining the current position. It follows, Defendants argue, that the claim language is internally inconsistent because it refers to a singular “current position” when reciting that the navigation system determines two different current positions. Similarly, Defendants argue that “current position” is indefinite because the term might mean two different things and a person of ordinary skill in the art would lack an informed and confident choice between the alternative meanings.

Responding to Defendants’ invalidity contentions, Beacon argues that “current position” should not be found indefinite. As opposed to two different current positions, Beacon reads the claim language as reciting that the navigation system uses the GPS velocity information with either the velocity heading or the map heading to determine one current position. Citing the “updates” limitation, Beacon points out that the claim language states the condition for using the GPS velocity information with the map heading. Beacon argues that the claim language is internally consistent because the condition precludes the determination of two different current positions.

To the extent Defendants do not prove that the term is indefinite, Beacon argues that “current position” should be given its plain and ordinary meaning. In accordance with its non-indefiniteness argument, Beacon argues that “current

position” needs no further construction because the term is easily understandable both alone and in the context of the claim language.

Alternatively to being found indefinite, Defendants argue that “current position” should be construed to mean “a position obtained by map matching a velocity vector, rotating said velocity vector (conditional), and integrating said rotated velocity vector.” Defendants argue that “current position” needs construction to give the term, and, in particular, the first instance and the third instance, the same meaning throughout the claim language. Reading the claim language as reciting that the third instance of the term is the most current “current position,” Defendants argue that the proper construction of the term should be directed to the entirety of the claim language through the end of the “rotates/integrates/obtains” limitation.

As explained below, the Court finds that “current position” (1) is not indefinite and (2) should be given its plain and ordinary meaning.

Regarding Defendants’ indefiniteness argument, the dispute between the parties involves whether the claim language requires calculating two different current positions, one calculation for the first instance of “current position” in the “propagate” limitation and another calculation for the third instance of “current position” in the “rotates/integrates/obtains” limitation. The Court finds that read in the context of the ’511 Patent, the claim language is internally consistent with its use

of “current position.” The claim language only contemplates calculating one current position.

As background, the Court will now discuss how “current position” is used in each of the limitations of Claim 1 in which the term appears.

Initially, with respect to the first instance of “current position,” the claim language recites that the navigation system “uses said velocity information to propagate a previous position to a current position.” In the ’511 Patent, using the GPS velocity information is a particular way of propagating the previous position to the current position. For example, in the written description, the ’511 Patent describes that, rather than using GPS velocities, the navigation system could use information from the motion sensors. ’511 Patent 14:41-15:7.

With respect to the second instance of “current position,” the claim language recites that the navigation system “updates said velocity information with said map heading for propagating said previous position to said current position.” In the ’511 Patent, for purposes of propagating the previous position to the current position, using the updated GPS velocity information is a particular way of using the GPS velocity information. Defendants’ internal inconsistency argument follows from the proposition that using the velocity heading and using the map heading are mutually exclusive ways of determining the current position. However, as noted above, velocity is a vector that has speed and heading components. In the written

description, the '511 Patent describes that using GPS speeds and GPS headings, and using GPS speeds and map headings, are both ways of using GPS velocities. *Id.* 6:44-56, 10:23-50 (the navigation system can use “the GPS velocity (vector)” or “the GPS speed information and map heading”). Accordingly, although using the velocity heading and using the map heading might be mutually exclusive to one another, neither is mutually exclusive to using the GPS velocity information. Instead, using the GPS velocity information for propagation covers both using the velocity heading and using the map heading. As Beacon points out, the claim language further recites “if the difference between the heading of said velocity information and said map heading are within a threshold.” Accordingly, the claim language states the condition for using the GPS velocity information with the map heading.

With respect to the third instance of “current position,” the claim language recites that the navigation system “rotates said velocity to align with said map heading,” “integrates the rotated velocity,” and “obtains said current position by applying said displacements to said previous position.” In the '511 Patent, rotating the GPS velocity information to align with the map heading is a particular way of updating the GPS velocity information with the map heading. For example, in the written description, the '511 Patent describes that, rather than integrating rotated velocity vectors, the navigation system could integrate projected velocity vectors.



*Compare id.* 15:58-65 (describing Figure 7c), *with id.* 16:12-19 (describing Figure 7e).

In summary, in the context of the '511 Patent, the claim language generally recites that: (1) the navigation system uses the GPS velocity information to propagate the previous position to the current position; (2) wherein element (1) includes using the GPS velocity information with the map heading for propagation if the difference between the velocity heading and the map heading is within a threshold; and (3) wherein element (2) includes rotating the GPS velocity information to align with the map heading. As to element (1), if the difference between the velocity heading and the map heading is within a threshold, then the “propagate” limitation is rendered redundant by the “updates” and “rotates/integrates/obtains” limitations, and essentially serves as an introductory statement of intended use for the claim language as a whole. Alternatively, if the difference between the velocity heading and the map heading is not within a threshold, then the claim language as a whole does not place any limitation on how the navigation system uses the GPS velocity information to propagate the previous position to the current position.

Accordingly, with respect to the singular “current position,” the claim language is internally consistent because the limitations in which the term appears are related as further limitations, not mutually exclusive limitations. Among other

things, contrary to Defendants’ internal inconsistency argument, although using the velocity heading and using the map heading might be mutually exclusive to one another, using the GPS velocity information for propagation covers both, and the claim language states the condition for using the GPS velocity information with the map heading. Because the claim language is internally consistent with respect to the way the navigation system uses the GPS velocity information to propagate the previous position to the current position, the Court finds that “current position” is not indefinite.

As to the proper construction of the term, as noted above, Defendants argue that “current position” should be construed to mean “a position obtained by map matching a velocity vector, rotating said velocity vector (conditional), and integrating said rotated velocity vector.” Beacon argues that the Court should reject Defendants’ proposed construction because it improperly imports existing limitations into the scope of the term. The Court agrees. In addition to redundantly imposing existing limitations on the third instance of “current position” in the “rotates/integrates/obtains” limitation, to the extent the difference between the velocity heading and the map heading is not within a threshold, Defendants’ proposed construction improperly imposes non-existing limitations on the first instance of “current position” in the “propagate” limitation.

Defendants argue that the Court should reject Beacon’s proposed construction because Beacon does not explain the ordinary meaning of “current position.” However, Defendants do not rebut Beacon’s argument that the term is easily understandable. Moreover, the intrinsic evidence does not define “current position” or otherwise reveal that the term has a special definition other than its ordinary meaning. *Phillips*, 415 F.3d at 1314. In connection with their indefiniteness argument, Defendants also cite the context of moving vehicles to pose rhetorical questions of how current a particular position must be and when a particular position stops being current. However, at this stage of the cases, the parties have not yet explained whether a more nuanced construction is necessary or warranted in light of the infringement and validity issues. For example, Defendants do not suggest a situation where the accused navigation systems satisfy, or the prior art discloses, each limitation but for a genuine question of whether an alleged current position is really a previous position. Finding nothing in the intrinsic evidence or the *Markman* briefs concerning the need for further construction, the Court adopts Beacon’s proposed construction and preliminarily finds that “current position” should be given its plain and ordinary meaning, while preserving the authority to modify its construction as the infringement and validity issues become known. *Conoco, Inc. v. Energy & Envtl. Int’l, L.C.*, 460 F.3d 1349, 1359 (Fed. Cir. 2006) (recognizing that

“a district court may engage in claim construction during various phases of litigation, not just in a *Markman* order”).

**B. “Propagating said Previous Position to said Current Position” (Claim 1) and “Propagate a Previous Position to a Current Position” (Claim 3)**

| <b>Disputed Term</b>  | <b>Beacon’s Proposed Construction</b> | <b>Defendants’ Proposed Construction</b> | <b>Court’s Construction</b>                |
|---|---------------------------------------|--|--|
| “propagating said previous position to said current position” (Claim 1) and “propagate a previous position to a current position” (Claim 3) | Plain and ordinary meaning            | Indefinite.                              | Not indefinite; Plain and ordinary meaning |

The parties request that the Court construe “propagating said previous position to said current position” in Claim 1 of the ’511 Patent and “propagate a previous position to a current position” in Claim 3 of the ’511 Patent. In Claims 1 and 3, the corresponding term appears in the “propagating” and “propagate” limitations and includes the related term “current position.” In their *Markman* briefs, the parties state that their above arguments with respect to the current position term apply to the instant propagation terms. As to definiteness, for the same reasons as the current position term, Beacon argues that the propagation terms should not be found indefinite, and Defendants argue that the propagation terms should be found

indefinite. Defendants, for their part, cite their above internal inconsistency argument to argue that the propagation terms should be found indefinite because a person of ordinary skill in the art would lack reasonable certainty about how the navigation system propagates the previous position to the current position. As to the proper construction of the propagation terms, Beacon argues that, because Defendants do not alternatively offer proposed constructions, the terms should be given their plain and ordinary meanings.

As explained below, the Court finds that “propagating said previous position to said current position” and “propagate a previous position to a current position” (1) are not indefinite and (2) should be given their plain and ordinary meanings.

As do the parties with their above arguments, the Court finds that its above discussion with respect to the related current position term in the context of Claim 1 applies to the instant propagation terms. As explained above, read in the context of the '511 Patent, the claim language is internally consistent with respect to the way the navigation system uses the GPS velocity information to propagate the previous position to the current position. Among other things, contrary to Defendants' internal inconsistency argument, using the GPS velocity information for propagation covers both using the velocity heading and using the map heading. Accordingly, the Court finds that “propagating said previous position to said current position” and “propagate a previous position to a current position” are not indefinite. Moreover,

finding nothing in the *Markman* briefs or the intrinsic evidence concerning the need for further construction, the Court adopts Beacon’s proposed constructions and finds that “propagating said previous position to said current position” and “propagate a previous position to a current position” should be given their plain and ordinary meanings.

**C. “Estimating the Velocity of a Vehicle” (Claim 3)**

| <b>Disputed Term</b>                             | <b>Beacon’s Proposed Construction</b>  | <b>Defendants’ Proposed Construction</b> | <b>Court’s Construction</b>            |
|--|--|--|--|
| “estimating the velocity of a vehicle” (Claim 3) | Preamble not limiting, no need to construe<br><br>Alternatively:<br>Estimating the position of a vehicle | Indefinite.                              | Not a claim limitation; Not indefinite |

The parties request that the Court construe “estimating the velocity of a vehicle” in Claim 3 of the ’511 Patent. The term appears in the preamble, which recites: “A method of estimating the velocity of a vehicle known to be on a mapped path.” The dispute between the parties concerns the difference between the preamble and the body. The parties agree that the preamble is different from the body in two ways. First, the preamble states that Claim 3 is a method of estimating velocity, but the body as a whole recites a method of determining position. More specifically,

while the claim language involves the velocity of the vehicle, the updated velocity, and the rotated velocity, the ultimate output of the limitations is the current position. Second, the preamble includes the only instance of “estimating.” The body does not explicitly recite any “estimated” velocities.

In Beacon’s opening brief, responding to Defendants’ invalidity contentions during discovery, Beacon argues that “estimating the velocity of a vehicle” should not be found indefinite. In support of its non-indefiniteness argument, Beacon argues that the preamble is not limiting, and that, because the preamble is not limiting, the preamble term is not a claim limitation, and therefore needs no construction. Beacon argues that the preamble is not limiting because the body recites a complete method, and because the patentee did not rely on the preamble during prosecution to distinguish the prior art. To the extent the preamble is limiting, Beacon agrees that the body recites a method of determining position, and requests that the Court correct the preamble term by construing “velocity” to mean “position.” Beacon argues that judicial correction is appropriate because its requested correction is consistent with the ’511 Patent and the prosecution history. With respect to the ’511 Patent, Beacon argues that since the body recites a method of determining position, the requested correction is consistent with the claim language, and does not change the scope of Claim 3. With respect to the prosecution history, Beacon argues that the patentee and the Examiner treated Claim 3 as a method of estimating position. As to

indefiniteness, Beacon argues that, when read as a method of estimating position, the preamble term does not render Claim 3 indefinite because a person of ordinary skill in the art would understand the way the navigation system determines the current position.

In Defendants' response brief, Defendants argue that "estimating the velocity of a vehicle" should be found indefinite. In support of their indefiniteness argument, Defendants argue that the preamble is limiting, and oppose Beacon's request for correction. Defendants argue that the preamble is limiting because it provides antecedent basis for terms recited in the body, and, by including the only instance of "estimating," defines Claim 3 as a method of estimating velocity. Defendants argue that the preamble term renders Claim 3 indefinite because a person of ordinary skill in the art would lack reasonable certainty about which velocity recited in the body corresponds to an estimated velocity, and whether the intended output of the method is a velocity or a position. Defendants argue that judicial correction is not appropriate because the claim language and the prosecution history suggest that the preamble was intended as written, and because Beacon's proposed construction would change the scope of Claim 3.

As explained below, the Court finds that "estimating the velocity of a vehicle" (1) is not a claim limitation and (2) is not indefinite. In addition, the Court finds that, while not necessary, judicial correction of the preamble would be appropriate.



At the outset, the parties raise three issues: (1) whether the preamble is limiting; (2) whether the preamble term and the corresponding difference between the preamble and the body renders Claim 3 indefinite; and (3) whether judicial correction is appropriate.

### **1. Prosecution History**

Finding it instructive on all three issues, the Court will begin by summarizing the prosecution history of the '511 Patent before the USPTO. At one point during prosecution, the subject matter of Claim 3 was recited in independent claim 5 (now Claim 3) and dependent claims 6 and 7 (now canceled). Following the instant preamble of Claim 3, the body of claim 5 only included the initial “determining,” “interrogating,” and “updating” limitations. In the dependent claims, claim 6 added the “propagate” limitation, and claim 7 added the “rotating/integrating/obtaining” limitation. The pending claims thus recited:

**5.** A method of estimating the velocity of a vehicle known to be on a mapped path comprising:

determining the velocity of the vehicle, the velocity including a heading;

interrogating a map database to obtain a map heading of said mapped path; and

updating said velocity with said map heading if the difference between the heading of said velocity and said map heading are within a threshold.

**6.** The method of claim 5 further including the step of using said velocity to propagate a previous position to a current position.

7. The method of claim 6 wherein said step of using includes rotating velocity to align with said map heading and integrating rotated velocity to obtain a displacement and obtaining said current position by applying said displacement to said previous position.

Application p. 35 (original claims 5-7), ECF No. 67-5, PageID.3615; Sept. 24, 1997 Amendment p. 2 (amended claim 5), ECF No. 67-5, PageID.3688.

The Examiner found that claim 7 was allowable, but rejected claims 5 and 6 as obvious in light of the prior art. Dec. 3, 1997 Non-Final Office Action pp. 4-5 (citing 35 U.S.C. § 103(a)), ECF No. 67-5, PageID.3698-3699. After the Examiner upheld the rejections, the patentee amended the body of claim 5 to include the “rotating/integrating/obtaining” limitation from allowable claim 7, as well as the “propagate” limitation from intervening claim 6. May 1, 1998 Final Office Action pp. 3-6, ECF No. 67-5, PageID.3710-3713; Aug. 3, 1998 Response p. 4 (amended claim 5), p. 7 (remarks), ECF No. 67-5, PageID.3720, 3723. The Examiner then allowed the application. Aug. 17, 1998 Notice of Allowance, ECF No. 67-5, PageID.3724-3726.

The prosecution history reveals that, in Claim 3, the body, as a whole, recites a method of determining position, but, in part, recites a method of estimating velocity. More specifically, while the body now includes the additional “propagate” and “rotating/integrating/obtaining” limitations, the preamble originated from an independent claim whose body only included the initial “determining,”

“interrogating,” and “updating” limitations. With respect to the initial limitations, the claim language did not involve the previous position or the current position. Rather, the claim language only involved the initial velocity and the updated velocity. It follows that the initial limitations correspond to a method of estimating velocity, and that the updated velocity corresponds to an estimated velocity. However, despite amending the body to include additional limitations that changed Claim 3 from a method of estimating velocity to a method of determining position, the patentee did not amend the preamble for consistency with the changes to the body.

## **2. Definiteness**

Turning to the issues raised by the parties, Defendants do not dispute Beacon’s argument that, if the preamble is not limiting, then the preamble term does not raise indefiniteness issues. *See, e.g., Sunoco Partners Mktg. & Terminals L.P. v. Powder Springs Logistics, LLC*, 2019 U.S. Dist. LEXIS 146831, at \*27 (D. Del. Aug. 28, 2019) (“In light of the Court’s conclusion that these preamble terms are not limiting, no further construction (or consideration of Defendants’ indefiniteness argument) is required.”).

The determination of whether a preamble is limiting is resolved on review of the entire patent to gain an understanding of what the inventors actually invented and intended to claim. *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d

801, 808 (Fed. Cir. 2002). A preamble is not limiting when the body defines a structurally complete invention, and the preamble is only used to state a purpose or intended use of the invention. *Id.* Conversely, a preamble is limiting when it recites essential steps, or is necessary to give life, meaning, and vitality to the claim. *Id.* For example, reliance on the preamble during prosecution to distinguish the prior art transforms the preamble into a limitation because it indicates use of the preamble to help define the invention. *Id.* Similarly, dependence on the preamble for antecedent basis may render the preamble limiting because it indicates reliance on both the preamble and the body to define the invention. *Id.*

Here, the Court finds that the preamble is not limiting for three reasons. First, Defendants do not dispute that the body recites a complete method, or that the patentee did not rely on the preamble during prosecution to distinguish the prior art.

Second, while Defendants argue that the preamble is limiting because it provides antecedent basis for terms recited in the body, this is not true for the preamble term that Defendants argue is limiting. *TomTom, Inc. v. Adolph*, 790 F.3d 1315, 1323 (Fed. Cir. 2015) (explaining that even when a preamble term “provides a necessary structure” to the claim, it “does not necessarily convert the entire preamble into a limitation”). As to “estimating the velocity of a vehicle,” Defendants have raised a disputed issue of definiteness because the body of the claim does not explicitly recite any “estimated” velocities. Moreover, the preamble does not, as

Defendants argue, provide antecedent basis for “the” velocity recited in the body. After the preamble recites “the velocity of a vehicle” and “a mapped path,” the body recites “the velocity of the vehicle” and “said mapped path.” Accordingly, in contrast to “the” vehicle and “said” mapped path, the body does not rely on the preamble for antecedent basis when reciting “the” velocity. Instead, both the preamble and the body recite “the” velocity as an inherent characteristic of the vehicle.

Third, the preamble term merely provides context for the limitations in the body. Although the body does not explicitly recite any “estimated” velocities, the Federal Circuit has explained that while “when construing terms in the body of a claim, the general assumption is that different terms have different meanings, the same generally is not true for terms in the preamble.” *Symantec Corp. v. Comput. Assocs. Int’l, Inc.*, 522 F.3d 1279, 1289 (Fed. Cir. 2008) (citation omitted). “The use of different language in the preamble than in the body of the claims,” the Federal Circuit explains, therefore “does not suggest that the preamble imposes a limitation.” *Id.* “Rather it is assumed that the preamble language is duplicative of the language found in the body of the claims or merely provides context for the claims, absent any indication to the contrary in the claims, the specification or the prosecution history.” *Id.* As noted above, the prosecution history reveals that the initial “determining,” “interrogating,” and “updating” limitations correspond to a method of estimating velocity, and that the updated velocity corresponds to an estimated velocity.

Accordingly, consistent with a standard non-limiting preamble, the preamble term merely provides context for the limitations in the body.

Because the body recites a complete method, and the preamble term merely provides context for the limitations in the body, the Court finds that “estimating the velocity of a vehicle” in the preamble of Claim 3 is not a claim limitation.

In any event, the Court finds that, even if the preamble was limiting, the preamble term does not raise indefiniteness issues. The only potential issue with Claim 3 is that the preamble provides context for some but not all of the limitations in the body. More specifically, the preamble provides context for the initial limitations that output the updated velocity, but not the additional limitations that ultimately output the current position. However, the Federal Circuit has held that a claim is not indefinite merely because the preamble does not reference every element recited in the body. *In re Larsen*, 10 Fed. App’x 890, 892-93 (Fed. Cir. 2001) (holding that a claim whose body made it “clear that the claim includes a hanger with a hook, a flexible loop, and a linear member” was not rendered indefinite by “the omission of any reference to the linear member in the preamble”). Because the body recites a complete method, and a person of ordinary skill in the art would understand the scope of Claim 3 despite the difference between the preamble and the body, the Court finds that “estimating the velocity of a vehicle” in the preamble does not render Claim 3 indefinite. *See id.* at 891-92 (rejecting arguments that the

preamble “obscures the scope of the claim” and makes it “unclear whether the linear member is being claimed”).

### 3. Judicial Correction

In addition, the Court finds that, while not necessary because the preamble is not limiting, judicial correction would be appropriate. The Federal Circuit has held that courts have the authority to correct errors in patents through claim construction. *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003). Although only the USPTO can correct “major errors” through its statutory authority to issue certificates of correction, courts can correct “obvious minor typographical and clerical errors” through claim construction. *Id.* at 1354-57 (citing 35 U.S.C. §§ 254, 255 (certificates of correction); *I.T.S. Rubber Co. v. Essex Rubber Co.*, 272 U.S. 429, 441-42 (1926) (“*Essex*”) (upholding construction of a claim to include a missing word whose omission “was through a clerical error due to oversight”)).

The Federal Circuit has articulated a two-part test for determining whether judicial correction is appropriate. “A district court can correct a patent only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims.” *Id.* at 1357. To correct an error, the error must be “evident from the face of the patent,” and the court “must consider how a potential correction would impact the scope of a claim and if the inventor is entitled to the

resulting claim scope based on the written description of the patent.” *Pavo Sols. LLC v. Kingston Tech. Co.*, 35 F.4th 1367, 1373 (Fed. Cir. 2022) (quotations omitted).

In accordance with these principles, the Court finds that judicial correction of the preamble for consistency with the body would be appropriate in the context of the ’511 Patent. At part one of the judicial correction test, correction is not subject to reasonable debate. The preamble states that Claim 3 is a method of estimating velocity, but it is evident from the face of the ’511 Patent that the body as a whole recites a method of determining position. Moreover, because the body recites a complete method, and the preamble is not limiting, correction would not change the scope of Claim 3. Similarly, at part two of the judicial correction test, the prosecution history confirms the interpretation where Claim 3 recites a method of determining position based in part on a method of estimating velocity. Accordingly, the Court finds that judicial correction of the preamble for consistency with the body would be appropriate. *See Essex*, 272 U.S. at 442 (“This is not in any real sense, a re-making of the claim; but is merely giving to it the meaning which was intended by the applicant and understood by the examiner.”).



**D. “Previous Position” (Claims 1 and 3)**

| <b>Disputed Term</b>                 | <b>Beacon’s Proposed Construction</b> | <b>Defendants’ Proposed Construction</b> | <b>Court’s Construction</b> |
|--------------------------------------|---------------------------------------|--|-----------------------------|
| “previous position” (Claims 1 and 3) | Plain and ordinary meaning            | The preceding current position           | Plain and ordinary meaning  |

The parties request that the Court construe “previous position” in Claims 1 and 3 of the ’511 Patent. The parties agree that, in the ’511 Patent, each previous position was once a current position. The dispute between the parties concerns the relationship between the current position and the previous position in the claim language.

Beacon argues that “previous position” should be given its plain and ordinary meaning. Similar to its above argument with respect to “current position,” Beacon argues that “previous position” needs no further construction because the term is easily understandable.

Defendants argue that “previous position” should be construed to mean “the preceding current position.” Defendants argue that, for consistency with the ’511 Patent, the term needs construction to directly tie the previous position to the preceding current position. Defendants read the claim language as embodying the equations used by the disclosed propagation techniques in the written description. Accordingly, Defendants argue that the claim language recites that each current

position is obtained by integrating a rotated velocity to obtain displacements and applying the displacements to each previous position. Defendants argue that the Court should adopt their proposed construction because the previous position cannot be anything except the preceding current position.

As explained below, the Court finds that “previous position” should be given its plain and ordinary meaning.

Initially, Defendants do not rebut Beacon’s argument that the term is easily understandable. Moreover, the intrinsic evidence does not define “previous position” or otherwise reveal that the term has a special definition other than its ordinary meaning. *Phillips*, 415 F.3d at 1314.

Likewise, the Court is not persuaded that Defendants’ proposed construction is consistent with the ’511 Patent. Although the parties agree that each previous position was once a current position, Defendants’ proposed construction implies that, when the previous position was a current position, the previous position was determined the same way that the instant current position is ultimately determined. However, in contrast to the current position, the claim language does not place any limitation on how the previous position was determined. Moreover, the written description contradicts Defendants’ reading of the claim language. As noted above, Defendants cite the written description to argue that the claim language recites that each current position is obtained by integrating a rotated velocity to obtain

displacements and applying the displacements to each previous position. However, in the written description, the '511 Patent describes that, in addition to using a velocity to propagate the current position from the previous position, the navigation system can use a GPS position or a map-matched position as a known current position. '511 Patent 8:27-31, 8:43-46 (map-matched position), 15:20-22 (GPS position).

Finding nothing in the intrinsic evidence or the *Markman* briefs concerning the need for further construction, the Court adopts Beacon's proposed construction and finds that "previous position" should be given its plain and ordinary meaning.

## **V. CONCLUSION**

The Court construes the disputed claim terms as set forth above. The Court reserves the authority to modify its claim constructions as the infringement and validity issues of the '511 Patent become known.

## **SO ORDERED.**

Dated: July 28, 2023  
Detroit, Michigan

s/Mark A. Goldsmith  
MARK A. GOLDSMITH  
United States District Judge